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3 cm. broad in the dried state; lamellae white, crowded; stipe slender, glabrous, slightly enlarged below; annulus inferior.

W. A. MURRILL.

A NEW BOOK ON THE BRITISH RUST FUNGI*

In 1889, Plowright brought out the first monographic account of the rusts of England. In the twenty-four years which intervened before the next comprehensive treatment of the group by Grove, in 1913, it is not surprising to find that sufficient information has accumulated to make the latter presentation much more bulky than the former. Plowright treated both the rusts and smuts in a single volume of 347 pages, while Grove requires in the present volume 412 pages for the rusts alone. The two authors have treated their subject in a very similar manner, giving first the biology, or natural history, of the group and following it with a systematic part which includes descriptions, hosts, and distributions. Plowright devotes 57 pages to the natural history of the rusts and 135 to their classification, whereas the later author uses 84 and 300 pages, respectively, for the two parts.

The expansion of the biological part by Grove is due partly to the fact that some entirely new topics, notably sexuality and separation of species into races, have been developed in the interim and partly to the fact that he treats at greater length the life histories of certain typical forms. It is interesting to note that *Puccinia Caricis* instead of *P. graminis* has been selected for extended consideration as "the typical Uredine." The author explains that he has done this because the aecia of *P. graminis* are rare and difficult to obtain for demonstration, while that of *P. Caricis* is common. In the second, or systematic portion, the increase in the recent book is due chiefly to the larger number of species included, although the more complete descriptions with somewhat fuller notes would call for more space. A comparison of the two main genera, *Puccinia* and *Uromyces,* will throw some light on the taxonomic situation from the standpoint of the species. Plowright included 100 species of *Puccinia* and 38 of *Uromyces,* while Grove has added 37 species of *Puccinia* and 10 of *Uromyces*. As to genera, the situation is perhaps still more striking, Plowright having included all species under 11 genera as compared with a list of 24 by Grove. It must be noted, however, that some genera have been discussed which have not yet been collected in England, but which the author apparently believes may be found there at any time on account of their prevalence in Europe.

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* The British Rust Fungi. By W. B. Grove, M.A., Pp. xii, 412. 290 text figs. Cambridge: at the University Press. 1913.

The book is well printed, profusely illustrated, and makes a neat appearance. The illustrations are original and highly satisfactory. They are very similar to those in Fischer's Uredineen der Schweiz, from which work the general form of the drawings seems to have been adapted.

The author very generously acknowledges that the descriptions of species are based upon Sydow's Monographia Uredinearum. In some instances it is regrettable that this work has been followed so closely as to include some of its errors. The descriptions are said to be revised and amended but evidence of culture work or first hand investigations of many of the special problems is usually lacking. Other writers' opinions are rather freely cited, but there is frequently considerable hesitation about the adoption of results if they differ from the usual disposition. In the citation of names, the dates have been intentionally omitted. As they are frequently important and would have required no additional space and little extra time in preparation, there seems to be no sufficient reason for such a procedure.

Sometimes statements in the biological discussions are of such a nature, either because of incompleteness or dogmatic form, as to attract attention. On p. 33, in a discussion of germ-pores in urediniospores, the statement is made that only one species of *Puccinia, P. monopora,* is known with the urediniospore possessing a single pore, although *P. uniporula* was published in 1912 (Orton in MYCOLOGIA 4: 201). Since that time the reviewer has found *Puccinia Veratri* and an undescribed *Uredo* on *Geranium mexicanum* to have 1-pored urediniospores, which suggests that the character is probably not so rare as was believed formerly. The conception of amphispores as given on p. 34 is not very clear, as is evidenced by the fact that Fig. 22 is given as an amphispore of *Puccinia Pruni-spinosae,* and that in the technical description on p. 208 amphispores are not mentioned in this species, while Fig. 156*b* is an exact duplication of Fig. 22, and is labeled "uredospore." Those who are interested in the evolution of the group will note that the author has very decided opinions in the matter when he states without qualifications that *Endophyllum,* whose aeciospores germinate as soon as mature with a basidium, represents "the primitive state of things from which the present wide division of labor into rejuvenating (aecidio-), multiplying (uredo-), and resting (teleuto-) spores has been evolved." Of wide interest also is the observation that "immunity depends chiefly (perhaps entirely) upon the ability of the cytoplasm to resist infections by secreting antitoxins which will kill the mycelium of the fungus."

FRANK D. KERN.